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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,833	04/14/2004	Dennis A. Carson	02307O-131710US	7743

20350 7590 11/29/2007

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EXAMINER	
OLSON, ERIC	

ART UNIT	PAPER NUMBER
1623	

MAIL DATE	DELIVERY MODE
11/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,833	CARSON ET AL.	
	Examiner	Art Unit	
	Eric S. Olson	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *September 20, 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *52-82,112 and 113* is/are pending in the application.

4a) Of the above claim(s) *52-63* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *64-82,112 and 113* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *September 20, 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

This office action is a response to applicant's communication submitted September 20, 2007 wherein claims 64, 69, and 112 are amended and claims 83-111 and 114-118 are cancelled. This application claims benefit of provisional application 60/463152, filed April 14, 2003.

Claims 52-82, 112, and 113 are pending in this application.

Claims 64-82, 112, and 113 as amended are examined on the merits herein.

Applicant's amendment, submitted September 20, 2007, with respect to the objection to instant claims 69-82 for depending from cancelled claim 14, has been fully considered and found to be persuasive to remove the rejection because these claims no longer depend from a cancelled base claim. Therefore the objection is withdrawn.

Applicant's amendment, submitted September 20, 2007, with respect to the rejection of instant claims 69-82 under 35 USC 112, second paragraph, for omitting the nucleic acid structure of claim 14, has been fully considered and found to be persuasive to remove the rejection as the claims have been amended to incorporate the structure of said nucleotide into base claim 69. Therefore the rejection is withdrawn.

Applicant's amendment, submitted September 20, 2007, with respect to the rejection of instant claims 64, 65, 67-82, and 112 under 35 USC 112, first paragraph, for lacking enablement for a method of treating any cancer whatsoever, has been fully

considered and found to be persuasive to remove the rejection as the claims have been amended to require hat the cancer be interferon-sensitive. Therefore the rejection is withdrawn.

The following rejections of record in the previous office action are maintained:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 64-66, 68-82 and 112-113 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a therapeutic method comprising administering specific inosine monophosphate dehydrogenase inhibitors such as mizoribine, mycophenolic acid, and ribivirin, does not reasonably provide enablement for any inosine monophosphate dehydrogenase inhibitor or for a prodrug of said compounds. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The Applicant's attention is drawn to *In re Wands*, 8 USPQ2d 1400 (CAFC1988) at 1404 where the court set forth eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

(1) The nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

Nature of the invention: The claimed invention is a method for treating a disorder by administering a chemical compound.

The state of the prior art: The Inosine monophosphate dehydrogenase inhibitors recited in instant claim 67 are known in the art and are recognized as having useful biological activities, particularly immunostimulation. Prodrugs of these compounds are not known in the art.

Various types of prodrugs exist in the prior art, which are used to produce different active agents *in vivo*. According to Silverman et al., (Reference included with PTO-892) prodrugs include esters, amides, schiff bases, oximes, acetals, enol esters, redox-activated protecting groups, polymer-bound drugs, bioprecursors, N- or O-alkylated drugs, azo compounds, sulfoxides, disulfides, phosphorylation substrates, and carboxylates, among others.

Furthermore, the prior art does not disclose the full range of all possible compounds that can inhibit inosine monophosphate dehydrogenase. Rather, there are likely a wide range of possible compounds having this activity that have not been contemplated by the prior art.

The relative skill of those in the art: The relative skill in the art is high.

The predictability or unpredictability of the art: As discussed above, there exist many different strategies by which one could attempt to generate a prodrug of a known compound. The appropriate prodrug for a particular application depends on various factors such as the compound being modified, the condition to be treated, the tissue to be affected, the species of the patient, and the desired rate of release. Because there exist many different types of cancer and target tissues in which the cancer could occur, many different prodrug modifications must be considered to determine the optimal prodrug for each situation.

Furthermore, because the activation of a prodrug depends on its being metabolized *in vivo* by an enzyme, knowledge of the *in vivo* prodrug activity of a compound requires knowledge of the vast array of metabolic enzymes which are capable of acting on it. In order to know every possible prodrug of a compound, one must first know every enzyme which could potentially convert some other compound into that compound. Thus the design of prodrugs is complex and unpredictable.

In addition to the difficulties of developing prodrugs of known compounds, the pharmaceutical art is unpredictable in that it involves the interaction between diverse types of active agents and various complex biomolecules and biological pathways. It cannot be predicted, in the absence of experimental data, what biological activities if any will be possessed by a novel compound *in vivo*. In addition to the complex manner in which a compound will interact with its specific biological target (e.g. an enzyme or receptor) the bioavailability, metabolic transformation, toxicity, and interaction with other drugs for each compound must also be considered.

Furthermore, the art of organic synthesis is unpredictable in that there exists no routine, predictable method for synthesizing any arbitrarily chosen compound. Rather, one skilled in the art must undertake to develop a novel synthetic strategy for the synthesis of said novel compounds, in the process undertaking unpredictable experimentation.

The Breadth of the claims: The claimed invention encompasses a method comprising administering any compound that can inhibit inosine monophosphate dehydrogenase, regardless of the structure, or other physical or chemical properties of the compound. A prodrug encompasses and compound which is metabolized, in whole or in part, into an inosine monophosphate dehydrogenase inhibitor when administered to any living subject, whether plant, animal, or other.

The amount of direction or guidance presented: Applicant's specification defines the term "prodrug" on p. 26, lines 1-16 and furthermore suggests various prodrug modifications which could hypothetically be made to the claimed compounds. Applicant's specification does not actually give any guidance beyond this suggestion to try certain compounds.

The presence or absence of working examples: No working examples of prodrugs are provided.

Note that lack of working examples is a critical factor to be considered, especially in a case involving an unpredictable and undeveloped art such as prodrug design. See MPEP 2164.

The quantity of experimentation necessary: One of ordinary skill in the art, in order to practice the claimed invention with the full range of prodrugs of compounds of formula I, would have to determine which compounds are in fact prodrugs of these active agents. For most derivatives of compounds of formula I, it is unknown whether they are or are not useful as prodrugs. Gathering this data for every compound fitting this description would involve *in vitro* screening of an large diversity of chemical compounds for the desired enzymatic transformation, as well as *in vivo* testing of compound involving either human or animal subjects to determine therapeutic utility. *In vitro* testing requires that the compounds to be tested be synthesized and subjected to an appropriate screening method. Synthesis of diverse chemical structures requires novel and unpredictable experimentation in order to develop suitable synthetic methods. *In vivo* animal experiments include, along with induction of the disease state, administration of the potential pharmaceutical compound and collection and analysis of data, additional burdens associated with compliance with animal welfare regulations, care, feeding, and other maintenance of the animals, and disposal of dead animals after the protocol is finished. Human tests impose even greater ethical and regulatory burdens, as well as additional difficulty locating subjects. Because of the unpredictability of the art and the lack of comprehensive working examples covering any significant portion of the total number of potential prodrugs, these animal experiments would need to be repeated hundreds of times, and involve the maintenance, killing, dissection, and disposal of thousands of experimental animals, to establish the activity or lack thereof of every potential prodrug, thus presenting an a burden of undue

experimentation to anyone practicing the invention with the full range of prodrugs claimed.

Similarly, one of ordinary skill in the art, in order to practice the claimed invention with the full range of IMPDH inhibitors beyond the meager number disclosed in the specification would be required to test potential compounds *in vivo* to determine whether a particular compound is useful as an IMPDH inhibitor. According to the 2006 Chemical Abstracts catalog, (Reference of record in previous action) The Chemical Abstracts Registry contains entries for approximately 26 million compounds, all of which are potentially included in the claimed invention if they happen to have IMPDH inhibitory activity. For most compounds, it is unknown whether they are or are not useful as IMPDH inhibitors. Gathering this data for every compound known to man would involve *in vitro* screening of an enormous diversity of chemical compounds for IMPDH inhibitory activity, as well as *in vivo* testing of compounds having this activity involving either human or animal subjects to determine therapeutic utility. *In vitro* testing requires that the compounds to be tested be synthesized and subjected to an appropriate screening method. As described earlier, synthesis of diverse chemical structures requires novel and unpredictable experimentation in order to develop suitable synthetic methods. *In vivo* animal experiments include, along with induction of the disease state, administration of the potential pharmaceutical compound and collection and analysis of data, additional burdens associated with compliance with animal welfare regulations, care, feeding, and other maintenance of the animals, dissection of dead animals to collect data, and disposal of dead animals after the protocol is finished. Human tests

impose even greater ethical and regulatory burdens, as well as additional difficulty locating subjects. Because of the unpredictability of the art and the lack of comprehensive working examples covering any significant portion of the total number of potential IMPDH inhibitors, these animal experiments would need to be repeated hundreds of times, and involve the maintenance, killing, dissection, and disposal of thousands of experimental animals, to establish the activity or lack thereof of every possible IMPDH inhibitor, thus presenting an a burden of undue experimentation to anyone practicing the invention with the full range of IMPDH inhibitors claimed.

Genentech, 108 F.3d at 1366, sates that, "a patent is not a hunting license. It is not a reward for search, but compensation for its successful conclusion." And "patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable."

Therefore, in view of the Wands factors, as discussed above, particularly the breadth of the claims and the unpredictability of the art, Applicants fail to provide information sufficient to practice the claimed invention for all IMPDH inhibitors or prodrugs of IMPDH inhibitors.

Response to Argument: Applicant's arguments, submitted September 20, 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant argues that one skilled in the art would have been able to discern and avoid inoperative embodiments. However, in order to avoid inoperative embodiments one skilled in the art must be able to determine without undue experimentation which embodiments are in fact inoperative. According to

MPEP 2164.08(b), "the scope of the claim may still not be enabled where undue experimentation is involved in determining those embodiments that are operable." In the instant case, the scope of compounds included is extremely broad and shares no limiting structural feature. Therefore, as discussed above, simply obtaining a representative sample of the claimed subject matter would involve numerous chemical syntheses and/or isolation of natural products. Performing either of these approaches for a broad range of compounds will involve undue and unpredictable experimentation because many compounds haven not yet been synthesized or isolated. Among these, many syntheses and isolation procedures are sufficiently complex that their development involves undue experimentation. Therefore the art is sufficiently unpredictable so as to present an undue burden of unpredictable experimentation in obtaining enough compounds for screening to determine which embodiments are operative.

Applicant also argues that the claims are directed to methods using known IMPDH inhibitors and not to novel inhibitors. However, the plain meaning of the claims would indicate otherwise, as the claims as written merely recite "an inhibitor of inosine monophosphate dehydrogenase," without limiting the scope to particular inhibitors. Therefore according to the plain meaning that the claim language would have to one skilled in the art, the scope of the claims includes all inhibitors of IMPDH whatever their structure, and not just those known in the art.

Applicant further claims that, "many known IMPDH inhibitors are prodrugs or have prodrugs, demonstrating that those of skill in the art are able to identify such

compounds without undue experimentation." However, this observation merely demonstrates that **some** prodrugs have been discovered and can be used by one skilled in the art. It does not demonstrate that **all** possible prodrugs can be identified, made, and used by one skilled in the art.

In conclusion, Applicant's disclosure, coupled with the level of skill in the art, is sufficient to allow one skilled in the art to use some IMPDH inhibitors, namely those already known in the art or which can be easily screened from chemical libraries, but does not enable the identification and use of every possible IMPDH inhibitor no mater how exotic. Therefore the rejection is deemed proper and made **FINAL**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 64-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tressler et al. (Reference of record in previous action) in view of Hirahashi et al. (Reference of record in previous action) Tressler et al. discloses a study of the anti-tumor activity of mycophenolic acid and mycophenolate mofetil against various cancer cell lines including leukemia and lymphoma cell lines. (P. 568, left column, last paragraph – right column, first paragraph, third paragraph, p. 569, paragraphs 3-4) Mycophenolate mofetil is disclosed to be useful for delaying of reducing the growth of

tumors *in vivo*. (p. 570, figures 1-3, p. 571, figures 4-5, p. 571, right column, second paragraph, p. 572, right column, paragraphs 1-2) Tressler et al. does not disclose a method further comprising administering an interferon inducer.

Hirahashi et al. discloses that administration of a hot water extract of the cyanobacterium *Spirulina platensis* is an effective anti-cancer agent *in vivo*. (p. 423, left column, first paragraph – p. 424, left column, second paragraph) Administration of spirulina is shown to induce greater IFN-gamma production in response to interleukin 12 and interleukin 18. (pp. 426-428, figures 1-3) Thus the spirulina extract is an interferon inducer that is also useful for treating cancer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to administer the mycophenolate mofetil of Tressler et al. in combination with the spirulina extract of Hirahashi et al. to a patient suffering from cancer. One of ordinary skill in the art would have been motivated to combine the references because both therapeutic methods are disclosed to be useful for treating the same condition, namely cancer. One of ordinary skill in the art would have reasonably expected success because both therapies are disclosed to be useful individually.

Thus the invention taken as a whole is *prima facie* obvious.

Response to Argument: Applicant's arguments, submitted September 20, 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant argues that there is no specific motivation for arriving at the specific combination of mycophenolate mofetil and spirulina extract discussed in the rejection. However, it is well within the knowledge of one of

ordinary skill in the art to use combination therapy of two drugs that are useful for treating the same condition, especially in an art such as cancer chemotherapy wherein combination therapy is the recognized standard for treatment and monotherapy is used seldom if ever. The fact that one of ordinary skill in the art would have had many different possible therapeutic agents to choose from would not have precluded them from making any one particular choice of two compounds to combine. The expectation of an additive effect from combining the compounds is sufficient for a case of *prima facie* obviousness.

According to MPEP 2144, "The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. >See, e.g., In re Kahn, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (motivation question arises in the context of the general problem confronting the inventor rather than the specific problem solved by the invention); Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc., 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005) ("One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.");< In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972) (discussed below); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991) Therefore the fact that the prior art does not explicitly state the same reason for combining the active agents as that used by Applicant does not render the claims patentable over the prior art.

Applicant further argues that there would not be a reasonable expectation of success for one of ordinary skill in the art to choose two chemotherapeutic agents from the wide variety available and combine them. However, choosing specific therapeutic agents and administering them as combination therapy is the normal practice in the art of oncology, as discussed earlier. One of ordinary skill in the art would have been able to accomplish this with no more than routine, predictable experimentation.

For these reasons the rejection is deemed proper and made **FINAL**.

Claims 64-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht et al. (Foreign Patent DE19811313, Reference of record in previous action) in view of Hirahashi et al. (Reference of record in previous action) Albrecht et al. discloses a procedure for determining the enzymatic activity of inosine monophosphate dehydrogenase in a patient being treated with an IMPDH inhibitor. (P. 1, lines 3-6) These inhibitors are revealed to be clinically useful for treating diseases including cancer. (p. 1, lines 31-34, p. 7, lines 49-57) IMPDH inhibitors that can be used clinically and monitored by the disclosed method include Mycophenolate mofetil, mycophenolic acid, Tiazofurin, Ribavirin, and mizorbine. (p. 7, lines 49-57) Albrecht et al. does not disclose a method further comprising administering an interferon inducer.

Hirahashi et al. discloses that administration of a hot water extract of the cyanobacterium *Spirulina platensis* is an effective anti-cancer agent *in vivo*. (p. 423, left column, first paragraph – p. 424, left column, second paragraph) Administration of spirulina is shown to induce greater IFN-gamma production in response to interleukin 12

and interleukin 18. (pp. 426-428, figures 1-3) Thus the spirulina extract is an interferon inducer that is also useful for treating cancer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to administer the IMPDH inhibitors of Albrecht et al. in combination with the spirulina extract of Hirahashi et al. to a patient suffering from cancer. One of ordinary skill in the art would have been motivated to combine the references because both therapeutic methods are disclosed to be useful for treating the same condition, namely cancer. One of ordinary skill in the art would have reasonably expected success because both therapies are disclosed to be useful individually.

Thus the invention taken as a whole is *prima facie* obvious.

Response to Argument: Applicant's arguments, submitted September 20, 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant argues that Albrecht et al. teaches that IMPDH inhibitors are immunosuppressants, and that one of ordinary skill in the art would therefore be discouraged from using them to activate the immune system by enhancing interferon production. However, the motivation for combining the compounds is the additional statement by Albrecht et al. that IMPDH inhibitors are useful for treating **cancer**. Therefore it is obvious to combine them with other cancer-treating compounds. Their interferon-enhancing effects need not be known in order for one of ordinary skill in the art to come to this conclusion.

Furthermore the remarks made with respect to Tressler et al. in view of Hirahashi et al. with respect to motivation to combine two cancer chemotherapeutic agents are relevant with respect to Applicant's arguments concerning this rejection.

For these reasons the rejection is deemed proper and made **FINAL**.

Claims 68, 112, and 113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht et al. (Foreign Patent DE19811313, Reference of record in previous action) in view of Hirahashi et al. (Reference of record in previous action) further in view of Kirkwood et al. (Reference of record in previous action) The disclosure of Albrecht et al. in view of Hirahashi et al. is discussed above. Albrecht et al. in view of Hirahashi et al. does not disclose a method further comprising administering exogenous type I interferon.

Kirkwood et al. reviews various studies of the antitumor effects of interferons, particularly interferon-α. (a type I interferon) Results are summarized in tale I, pp. 339-341. Results for specific tumors are also disclosed including renal cell carcinoma, (p. 344) melanoma (p. 345) lymphoma (p. 346) myeloma (p. 347) and leukemia. (p. 348)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Albrecht et al. in view of Hirahashi et al. by further administering exogenous type I interferon. One of ordinary skill in the art would have been motivated to add the interferon because Kirkwood et al. gives multiple examples of type I interferon being useful for treating various cancers. One of ordinary skill in the art

would have reasonably expected success because both therapies are disclosed to be useful individually.

Thus the invention taken as a whole is *prima facie* obvious.

Response to Argument: Applicant's arguments, submitted September 20, 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant's arguments are the same as those made with respect to Albrecht et al. in view of Hirahashi et al. above and are not found persuasive for the same reasons. Therefore the rejection is deemed proper and made **FINAL**.

Claims 69-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tressler et al. (Reference of record in previous action) in view of Hirahashi et al. (Reference of record in previous action) further in view of Krug et al. (Reference of record in previous action) The disclosure of Tressler et al. in view of Hirahashi et al. is discussed above. Tressler et al. in view of Hirahashi et al. does not disclose a method comprising administering an interferon inducer that is an oligonucleotide.

Krug et al. discloses a study of the interferon-inducing activities of CpG oligonucleotides. (p. 2155, left column, third paragraph) Several CpG ODNs are disclosed as having IFN-alpha and IFN-beta stimulating activities in PBMC cells, (p. 2155, right column, figure 1)

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute IFN-stimulating CpG oligonucleotides of the types disclosed by

Krug et al. in place of the spirulina extract in the method of Tressler et al. in view of Hirahashi et al. discussed above. One of ordinary skill in the art would have been motivated to modify the invention in this manner because the CpG oligonucleotides produce the same biological effect, stimulating interferon production, as the spirulina extract. One of ordinary skill in the art would reasonably have expected success because Hirahashi et al. already discloses an interferon inducer that is useful for treating cancer.

Thus the invention taken as a whole is *prima facie* obvious.

Response to Argument: Applicant's arguments, submitted September 20, 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant's arguments are the same as those made with respect to Tressler et al. in view of Hirahashi et al. above and are not found persuasive for the same reasons. Therefore the rejection is deemed proper and made **FINAL**.

Conclusion

No claims are allowed in this application. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric S. Olson whose telephone number is 571-272-9051. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on (571)272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Olson
Patent Examiner
AU 1623
11/14/07

Anna Jiang
11/15/07
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